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The Effect of Job Training on Peruvian Women's Employment and Wages

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Post-school training significantly improves the employment probabilities but not the wages for urban salaried and self-employed women in Peru, possibly because they train for low-paying jobs. Because their chances of receiving job training are largely determined by educational attainment, women with limited schooling also face limited training opportunities.

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Education and Employment

How does post-school training affect the employment and wage opportunities of urban women? This study of 3,826 urban Peruvian women aged 15 to 65 — drawn from the Peruvian Living Standards Survey — produced several conclusions:

Attendance in post-school training programs is extensive. About 28 percent of all women participate in occupational training outside the educational system. Most female trainees prepare for predominantly female occupations (clerical jobs) by attending proprietary institutes (academes) rather than job-based programs sponsored by the government through vocational training institutions.

The more schooling a women has, the more likely she is to receive job training. Women with less than secondary schooling have few opportunities for training. The typical trainee has completed secondary school, is in her early twenties, and tends to have had over a year of work experience when she receives training.

Post-school training generally increases a woman's chances of entering the labor force. Training increases the probability of private sector wage employment by 10 percent; public sector employment by 2 percent; nonwage sector employment by 5 percent.

Controlling for this employment effect and contrary to expectations, job training did not increase the hourly wage rates of women in the wage (private) and nonwage employment sectors.

There are several possible explanations for this finding. First, since women, on average, tend to expect to work outside the home fewer years than men, they have an incentive to train for occupations that require lower investments in human capital than those chosen by men. Typically, these occupations are characterized by flat wage profiles. Second, there are no standards for assessing the quality of the training in proprietary institutes where most women are trained. Finally, discrimination against women may prevent them from entering not only the most successful training programs but also the jobs that allow more wage and career advancement as well.

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CONTENTS

I. INTRODUCTION

Prior research on the effects of job-training among Peruvian males in the wage and nonwage (non-agricultural) sectors (Stelcner et al. 1988, Arriagada, 1989) showed no effect of training on the choice of sector of employment, but found a positive relationship between "occupational training" and earnings in the wage sector. Training was found to increase the earnings of male workers in the private sector by over 10 percent. This relationship remained positive and significant after selection into training programs was taken into account. In the nonwage sector, no relationship was found between occupational training and earnings.

Using data from the Peruvian Living Standards Survey (PLSS) carried out by The World Bank and the Peruvian National Statistics Institute (INE) during 1985-86, this report analyses the effects of job-training for Peruvian women. In particular this paper examines the following issues: Which women receive job-training? What are the determinants of women's participation in training courses? Does training have an impact on women's labor force participation? What is the impact of training on the earnings of women? Given that job-training activities are very limited in rural areas, the analysis focuses on women living in the urban areas of Peru.

The information gathered by the PLSS reveals that post-school training among women is as extensive as post-school training among men. About 2 percent of all women ages 15 to 65 reported participation in some occupational training course outside the formal education system. There are large variations in the percentage of women with training attendance by labor force participation status and sector of employment. About one half of the women in wage employment (public and private sectors) report training compared

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1/ The author wishes to acknowledge the comments of Rosemary Bellew, Avi Dor, Elizabeth King, Peter Moock and Philip Musgrove.

to 25 percent of the women in non-farm self-employment, and to 20 percent of women out of the labor force (World Bank 1986).

In this paper, the determinants of training are investigated using a binary choice model. The employment effects of job-training are examined using a multinomial choice model. The analysis of the wage effects of training accounts both for the probability of employment and of participation in training courses.

Section II presents the approach for analyzing the determinants of participation in post-school training programs and their labor market outcomes. It also describes the data used in the analysis. Section III describes the training patterns observed among Peruvian women. The next Section presents an analysis of selection into post-school training, and Section V considers the labor market effects of training for women, focusing on women's labor force participation, and the earnings effect of training for those in the private wage and nonwage sectors.

II. THE ANALYTICAL APPROACH AND DATA

This section presents the analytical framework of the study through a review of the literature concerning women's investments in human capital and the effects of job-training on their employment and earnings.

The literature offers several reasons to explain observed differences between male and female investments in human capital and labor market behavior. Mincer and Polachek (1974) develop a model within the human capital framework where differences in the labor force participation patterns of women and men explain those differences in human capital investment. The labor force participation pattern of women may lead them to invest less in

human capital than men [2/]. This is because they expect to withdraw from the labor market in order to raise children. The greater the investment horizon, the greater the incentive to invest in training. Since women "expect" periods of withdrawal from the labor force, the investments they make in human capital have a shorter time in which to earn returns relative to comparable investments made by men of the same age. In addition, these authors point out that womens' human capital depreciates with withdrawal from the labor force, lowering the lifetime returns to these investments. Zellner (1975) extends Mincer and Polachek's model to explain the differences between male and female occupational distributions. Given that occupations differ in the amount of human capital investment they require, and since women make lower investments in human capital than men, it follows that relatively more women will enter occupations with fewer human capital requirements than men. Then, predominantly female occupations require lower levels of human capital investments and have lower rates of human capital depreciation than predominantly male occupations. Empirical research testing these propositions finds that while there is depreciation during labor force withdrawals, losses tend to be made up quickly upon reentry (Mincer and Ofek 1982). England (1982) finds no long-term wage effects for labor force withdrawals. Corcoran and Duncan (1979), Levine and Moock (1982) do not find that women invest less in human capital during given types of work experience. But women have less work experience, more part-time work, and more time outside the labor force. They find that women spend less time in on-the-job training and stay in a job for a shorter duration than men. In addition, research has found that women face discrimination to entry into skilled jobs in certain occupations and industries (see review by Gunderson and Reid 1981). Finally, some studies present some evidence of "differing tastes" of women and men regarding occupational choices arising from gender-specific socialization patterns (Daymont and Andrisani 1984, Strober 1984).

[2/] Note that there will also be returns to human capital outside the labor market which may provide incentives for women to invest in education and training.

Empirical work on the effects of job-training for women in developing countries is extremely scarce. For the most part research has been carried out through longitudinal evaluations of government-sponsored training programs in developed countries [3/]. In spite of overall agreement on the main findings of these evaluations, there is a substantial amount of skepticism about their results because the studies used different techniques of analysis and a variety of assumptions to handle the available nonexperimental data (Lalonde 1986). The nonexperimental nature of the data implied that the studies had to make specific assumptions with regard to the procedures used for the "selection" of the participants in the training programs, and for the development of "comparison" groups. Nevertheless, studies agree that job-training significantly affects the employment and earnings of women. In fact, it appears that women receive significantly higher returns to training than men, and that most of that difference is associated with the increase in labor supplied by women (Bloom and McLaughlin 1982, Bloom 1987, Bassi et. al. 1984, Boothby 1986). Regardless of the type of program taken, the main effect of training for women is to facilitate labor market entry (Ashenfelter 1978, Kiefer 1979, Westat 1980). The studies indicate that the individuals who were out of the labor force prior to training show the greatest improvement relative to those who had permanent labor force participation. Research also indicates that all types of training programs (classroom, on-the-job, and work internship) noticeably increase the earnings of women, while on-the-job and apprenticeship training programs have the greatest impact on the earnings of men. This difference has been explained by the different training patterns of men and women. Women typically receive skills for clerical and service jobs which can be taught in a variety of institutional settings, while men typically receive skills for blue collar jobs (craftsmen and operatives) which are taught on-the-job or through apprenticeships (Boothby 1986).

[3/] These programs seek to provide unemployed, underemployed and economically disadvantaged women with job-skills that will increase their employability and earnings. See, Barnow B., "The Impact of CETA Programs on Earnings: A Review of the Literature", Journal of Human Resources, Spring 1987.

This brief review of the literature implies that an empirical model on the effects of training on women should pick up employment effects on the one hand, and earnings effects, on the other.

The model and estimation techniques used to address the determinants of training, and the employment and earnings effects of post-school training are presented below.

Selection into Training

In order to examine the determinants of entry in training programs a standard logit model was used, where the binary variable "T" is defined as 1 if job-training was undertaken between 1975 and the date of the survey. This analysis is conducted on the overall sample of women, regardless of their current labor force status. The participation decision depends on the present value of the expected future earnings (V) associated with each alternative. In a binary model the training choice is defined as:

$P_1 = f(V_1 + v_1)$

and the probability of not choosing training is:

$P_0 = f(V_0 + v_0)$

In this case,

$V_1 = Z\gamma_1$ and $V_0 = Z\gamma_0$

where Z is a vector of individual characteristics which are likely to affect individuals' expected earnings. Each characteristic affects every alternative differently, as reflected by the choice-specific coefficients γ_1 and γ_0. The individual will choose training over the other alternative if:

$P_1 > P_0$, or equivalently if:

$V_1 - V_0 > v_0 - v_1$

This probability of training may be expressed as a logit model,

$$P_1 = \frac{e^{V1}}{1 + e^{V1}}$$

where P_1 is the probability of receiving training. The specific explanatory variables included in the model will be discussed in Section IV.

The Employment Effects of Training

In order to examine the employment effects of job-training, a sector of employment choice model was estimated that gives the probabilities of employment in the wage private, (wage) public or self-employed sectors, relative to not working. P_i is the probability of choosing employment sector i. A woman faces four choices as follows:

- i = 0 the default option of not working, being unemployed or an unpaid worker
- i = 1 private sector wage employment
- i = 2 public sector wage employment
- i = 3 nonwage sector employment

The choice among several alternatives can be expressed as a multinomial logit model, that is:

$$P_i = \frac{e^{V_i}}{1 + \sum_{i=0}^{3} e^{V_i}}$$

where P_i is the probability of working in the ith sector, relative to the probability of not working at all, and

$$V_i = b\ S + r$$

where as before, V_i depends on expected earnings associated with working in each sector, and on the value of a woman's time at home for those

not working. S is a set of characteristics which affect the choice and τ is an error term normally distributed. The default option P_0 is the probability of not working at all, with coefficients normalized to zero. The components of vector S will be discussed in Section V.

The Earnings Effects of Training

For the sample of women who work in the wage and nonwage sectors, the effect of training on their earnings can be expressed as:

$$\ln W_i = \beta X + \alpha T + \epsilon_1$$

where W_i denotes the wage rate of woman "i", X represents explanatory variables of her wage rate, β is a vector of parameters, α is the proportionate effect of training on wage rates, T is a dummy variable equal to 1 if the individual received training, and ϵ_1 is a random error term.

However, there are two potential sources of bias in ordinary least squares estimates of this wage equation. One, estimates could be biased because earnings are observed only for those women who are in the labor force after training. Two, estimates could be biased because of self-selection in training courses.

With regard to the first source of bias, if there is correlation between the error term of the wage equation and labor force participation, the expected value of "ϵ_1" for the labor force participants will be non-zero. To the extent that training affects women's labor force participation (Kiefer

1979), the estimates of the effects of job-training in the wage equation will be biased. This will be more so if one considers that women are not randomly distributed between wage (public and private) and nonwage employment.

In order to account for these employment effects, this paper follows the two stage selectivity bias approach developed by Lee (1983) and Trost and Lee (1984). In the first stage, the following selection term is generated from the multinomial logit model of sector of employment choice specified in the previous section:

$$\lambda = \phi\ (J(\beta_s'\ X))/F(\beta_s'\ X)$$

where β_s is the parameter vector of the alternative chosen, ϕ is the standard normal density function, F is the standard normal density function, and J is Φ^{-1} F, where Φ is the standard normal distribution function.

In the second stage, λ is included among the explanatory variables. The presence of λ in the wage functions corrects for differences in the probability of being employed in a given sector thereby yielding consistent parameter estimates. In this paper, this procedure is applied to the wage equations of women in the private sector and in self-employment.

With regard to the second source of bias in ordinary least squares estimates, if participation in job-training is not random, the women who received training would have had different wages from those of the women who did not train, even in the absence of training. Again, this implies that

there is a non-zero correlation between the training variable and the earnings error. In order to account for this latter source of bias in the wage estimates while accounting for labor force participation, one could use instrumental variables for training (Heckman 1977). The predicted probabilities of training participation estimated by the training probit could be used instead of observed values of the training variable in the wage equation [4/].

The Data

As stated earlier, this analysis uses the PLSS data set. In this paper, women aged 15 to 65 were classified first as labor force participants uif they "worked" one hour or more during the seven days or twelve months prior to the survey, or were looking for work, and as non-participants if they reported no work activities in either reference period [5/]. Second, any woman in the labor force was then classified according to the activity she reported as the "main job" in the seven days prior to the survey. If she did not work

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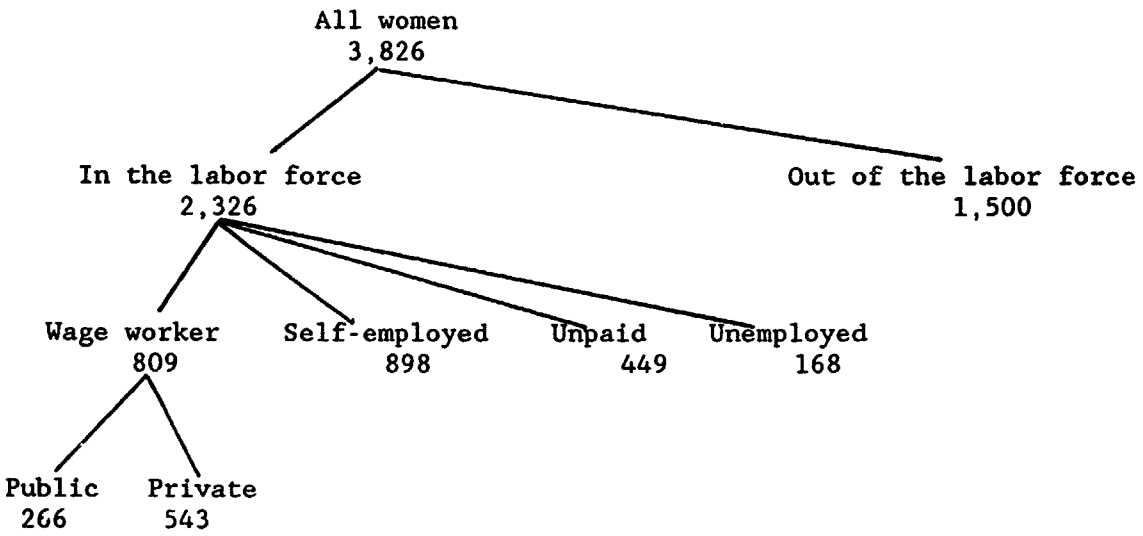
[4/] To determine whether to use instrumental variables or observed values for training, a test for the correlation between training and the error term will be used. The test includes both the instrumental and the observed training variables in the wage equations. If there is correlation between the probability of entering training and the error term, the coefficient of the instrumental variable will be significant. In this situation, the use of instrumental variables would be appropriate. If there is no correlation between the training variable and the error term, the coefficient of the predicted probabilities would be insignificant, and the use of the observed training variable would be appropriate. See Wu 1973, Hausman 1976, Kiefer 1979.

[5/] There were about 300 women who were out of the labor force during the seven days prior to the interview, but reported a job and hours of work during the last twelve months.

that week, we use the job reported as the "main job" in the last twelve months. Notice that the main job was defined as the occupation in which the interviewee worked the "most hours" without using any income criterion. "Wage workers" are those employees in the public and private sectors who reported positive hours of work as well as positive earnings [6/]. "Nonwage workers" are those non-agricultural self-employed women who reported income from household enterprises during the week prior to the interview, as well as information on the businesses. "Unpaid workers" are those women who reported a job and positive hours of work but no cash or in kind payment for their labor. Figure 1 depicts the distribution of the overall sample by activity.

Figure 1

Distribution of the Sample of Women Aged 15 to 65 years



[6/] Domestic workers were excluded from the sample because their employment conditions do not comply with the usual conditions of wage employment.

Besides the general shortcomings of the PLSS for the analysis of training, (see Arriagada 1989) there is a gender-specific difficulty with the data set. The majority of women interrupt their labor force participation at some point in their lives. The lack of complete occupational histories is a significant constraint for estimating women's returns to education and training, because the survey does not offer any direct measurement of accumulated work experience. This is relevant because women who work may adjust their labor force activities to meet family needs in ways that may affect productivity, and therefore wage rates. Thus, women may restrict job locations, work schedules and number of hours of work. Using the usual proxy for experience (age - 6 - years of schooling) for prime-age males is probably appropriate, but using it for women is inadequate. As Mincer and Polacheck (1974) discuss, women tend to suffer more unemployment, have lower labor force participation, and work fewer hours when employed than men. Blinder (1976) illustrates how the use of the usual proxy for experience in inappropriate circumstances implies that every coefficient in the wage regression will be biased, and that no results on the direction of the bias can be predicted.

Table A-1 Annex 1 presents the definitions and measurement of the variables used in the analysis and indicates how they enter the training (TR), employment (LF) and wage (W) equations.

III. OVERALL PATTERNS OF TRAINING

This section describes the basic characteristics of the women in the sample according to their training and employment status, and reviews training activities by provider of training.

In Peru, training for direct employment as well as upgrading of the employed labor force is carried out by several decentralized public agencies with financial and educational autonomy, and by private or proprietary institutions. The administration of publicly provided training programs is

handled by several ministries [7], public universities, and by the military. Proprietary schools include "academes", some technical institutes, private universities, and institutions managed by entrepreneurial associations or by a group of firms [8]. Among these, academes are operated for profit. According to unofficial estimates of the Ministry of Education, there were more than 2,000 such academes in Peru in 1986. They offer mostly short classroom-type training courses (ranging from one week to six months) in a set of trades and occupations which require low capital investments and have a low operating cost, mostly due to inexpensive instructors. The most common courses offered cover clerical skills, scme health-related skills, cosmetology, hair dressing, interior design, tailoring, cooking and languages. Applicants do not seem to be screened by schooling certificates, and the academes advertise the possibility of training while working part-time.

As stated earlier, the population of trainees is restricted to those women who received post-school training after 1975. This period covers the time in which most training programs were already established and in operation. In fact, most of the training reported in the survey took place in the last 10 years.

Table 1 displays the mean values of some basic variables stratifying the sample by training status. The schooling information is presented by the distribution of educational attainment and the two proxies of school quality used in this paper: public/private schooling attendance, and whether the last primary school attended provided free meals. Food at school was selected among other proxies because in the Peruvian context it captures not only

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[7] Such as Mining, Labor, Health, Industry, Agriculture, Fisheries. The best known institutions are: Servicio Nacional de Adiestramiento en Trabajo Industrial (SENATI) in manufacturing trades, Servicio Nacional de Capacitacion para la Industria de la Construction (SENCICO) in construction trades, Centro Nacional de Formacion en Turismo (CENFOTUR) in tourism, and Centro de Formacion y Capacitacion de Personal (CEFOCAP) in occupations for the mining industry.

[8] For a review of the operation of the training schemes in Peru, see Arriagada, AM., op. cit., section II.

Table 1
All Women: Sample Characteristics Means by Training Status

CHARACTERISTICS	With Training	Without Training
No. of observations	1,060	2,766
Lima	666	1,286
Other Urban Areas (OUAs)	394	1,480
Mean years of age	29.1*	33.8
	(9.0)	(14.7)
Age groups		
15 - 19 years old	0.09*	0.23
20 - 29 years old	0.51*	0.22
30 - 39 years old	0.27	0.19
40 - 49 years old	0.08*	0.17
50 - 59 years old	0.03*	0.12
60 - 65 years old	0.01	0.06
Schooling Attained		
Years of schooling	9.8*	7.0
	(2.9)	(4.0)
Primary (0-5 yrs)	0.12*	0.42
Some secondary(6-9 yrs)	0.15*	0.23
Secondary (10 yrs)	0.47*	0.21
Some higher (11-13 yrs)	0.13*	0.05
Higher (14+yrs)	0.12*	0.07
School last attended was public	0.78	0.77
Free meals last primary school	0.40	0.31
Background		
Father's years of schooling	6.7	5.5
Mother's years of schooling	4.8	3.6
Father's occupation farmer	0.20*	0.36
Married or as if	0.45	0.51
Migrant	0.60	0.55

Table 1 (cont)

CHARACTERISTICS	With Training	Without Training
Activity		
Wage worker private sector	0.25*	0.09
Wage worker public sector	0.12*	0.05
Self-employed	0.21	0.24
Unpaid worker	0.11	0.12
Out of the labor force	0.30*	0.49
In the Labor Force a/	0.56*	0.44
Job specific experience (years)	3.8*	6.7
	(4.9)	(8.4)
Usual weekly hours worked	34.7*	37.1
	(19.1)	(21.8)
Months worked last 12 months	8.4	9.0
All Paid Workers b/		
Monthly earnings (intis June 1986)	756*	683
	(1,141)	(940)
Real hourly wage rate (intis June 1986)	5.87*	4.53
	(10.5)	(5.6)
Private Sector Worker		
Monthly earnings (intis June 1986)	692	718
	(587)	(746)
Real hourly wage rate (intis June 1986)	4.93	4.61
	(8.57)	(5.66)
Nonwage Sector Worker		
Monthly earnings (intis June 1986)	643*	595
	(1,587)	(1,009)
Real hourly wage rate (intis June 1986)	6.38*	4.02
	(13.60)	(5.75)

Note: a/ Means include only women who reported positive hours of work during the 7 days or 12 months prior to the interview, regardless of whether they were paid.
b/ Means include only those in a/ who reported payments in cash and/or in kind.
Standard deviations in parentheses.
* Differences between means are statistically significant at 10 percent level or better.

physical resources available in a school, but also its degree of organization. In other words, a school that has and manages a free meal program for its students is likely to be a school attended by poor children but with good management, and hence to be a good school. The family background variables included are meant to capture the socioeconomic conditions and the cultural factors that possibly affected school attainment and training preferences of the women in the sample. The table also shows labor supply and wages of the working women in the sample by training status.

As seen in Table 1, most training activities take place in Lima where 34 percent of the women report training, compared to 20 percent in OUAs. A comparison of women's schooling with prior results for men [2/] indicates that women in the private sector have slightly more formal schooling than their male counterparts. In the nonwage sector, the pattern is the reverse: men have larger amounts of formal education than self-employed women. As was found for men, women who pursue training are significantly younger and have higher educational attainment than women who have not received training. Job-training is mostly pursued by those with secondary schooling and more. With regard to socioeconomic background and school quality proxies, the relative advantage of trainees is not statistically significant, except for the lower participation in training of the daughters of farmers.

An overall comparison of the groups with and without training by activity at the time of the survey, reveals that women with training participate significantly more in the labor force, particularly in the wage sector. As mentioned in Section II, prior research in developed countries finds that training leads to higher employment among women. The figures of Table 1 suggest that this is the case in Peru. Nevertheless, as was found for men, trainees work fewer hours per week than those with no training. Turning to a comparison of monthly earnings and hourly wage rates by training status, the results here differ from those of males. No differences were found between the wages of women with and without job-training in the private

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2/ Ibid.

sector, while in the nonwage sector those who received training commanded higher wages. A wage advantage for males was found, regardless of sector of employment and training status, of about 20 percent.

Comparison of occupation and industry of employment of the women in paid employment by training status (see Annex 2) shows larger proportions of trainees in clerical jobs and in the financial and services sectors. This finding is quite consistent with prior research, where for the most part clerical, office and health skills are offered for women in job-training programs. The large majority of women with no training are vendors in the retail commerce sector. In regard to the few women in production-related jobs, it was not possible to distinguish any difference between those with and without training.

The figures of Table 2 summarize the training activities reported in the survey, grouped by training providers. The criteria for grouping agencies are largely based on available information about the Peruvian training system [10/]. Job-based programs (JBP) were defined as those courses received on-the-job or off-the-job in occupational training institutes. Post-secondary training (PST) includes those courses provided by technical institutes and universities. Academes (ACT) are proprietary training schools. The remaining category, "Other", includes correspondence courses as well as training received from unidentified sources.

As in the results of most research, most women in the sample received job-training in institutions providing clerical and office skills. These skills are mostly offered by "academes", where 47 percent of the women received training. Among men, most job-training was received in job-based programs (44 percent) [11/]. Taken together, these results show the expected

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[10/] Ibid., Section II.

[11/] Ibid., Table 3.

Table 2
Women: Characteristics of longest course and trainees by type of training institution

CHARACTERISTICS	Type of Training Institution			
	Job Based (JBP)	Post-sec. Institute (PST)	Academes (ACT)	Other
Number of observations	264	102	497	197
Mean age when trained	25.1	23.7	21.7	28.3
Mean years of schooling when trained	9.8	11.5	9.6	8.0
Mean years ago training was undertaken	4.3	4.1	4.6	4.0
Gap between schooling and training (years)	9.3	6.2	6.0	14.3
Same job when trained a/	0.29	0.22	0.21	0.37
Years of reported work experience when trained	2.37	1.28	1.10	3.74
Mean training hours	599	735	565	349
Received training diploma	0.73	0.84	0.67	0.52
Mean hourly wage rate private sector worker	4.63 (4.0)	3.64 (2.5)	5.58 (11.7)	4.39 (4.3)
Mean hourly wage rate nonwage sector worker	8.88 (22.0)	7.54 (23.4)	4.98 (33.4)	5.75 (9.1)

Note : a/ Includes labor force participants only.

different patterns of job-training by sex. It appears that proprietary training institutions play a larger role than is acknowledged by the Peruvian training sector, particularly with regard to women's training. In fact, these findings question the view commonly held by education authorities, planners, and donor agencies, which view proprietary training as of marginal importance (Dougherty 1989). The large proportion of women who choose to receive training in academes may indicate an excess demand, or the lack of access of

women to the officially sponsored training programs. For the most part women do not have the jobs for which the most important and officially sponsored training schemes provide training [12/]. Moreover, given their labor force attachment, it is not likely they will participate in these programs. As seen in Table 3, only a small proportion of women remain in the same occupation after training.

Alternatively, proprietary training may be representing women's preferences: typically, this type of institution has low fees and provides the kind of skills mostly sought by females. Women may choose not to train for occupations where on-the-job training with the employer is a crucial determinant of wage rates. Therefore, women would prefer to train for jobs requiring less on-the-job training (Boothby 1986). Comparing mean hourly wage rates by source of training, "academe" trainees have the highest wage rates in private wage employment, while they have the lowest wage rates in self-employment. Finally, this pattern may be reflecting women's awareness of labor market barriers against females in non-female occupations.

Not surprisingly -- since the training event recorded is the longest one -- the average duration of the training program is substantial in practically all types of institutions. As to whether trainees received a diploma, the figures in Table 2 indicate female completion rates well above those found among males. As in the sample of men, the longest training event takes place several years after schooling ends. On average, women receive training in their early twenties. Unlike the case for men, this gap does not indicate accumulation of work experience prior to training. According to

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[12/] The few available indicators of women's participation in the largest official training institute (SENATI) show that less than 4% of all participants in courses in 1974 were women. Moreover, of these women, three quarters received training in clerical and accounting skills. Chang and Ducci, Tables 2 and 3, 1977).

self-reported work experience, [13] on average, women had less than two years of experience in the labor market at the time they received training.

The descriptive statistics reviewed in this section suggest first, that women's participation in occupational training is closely related to formal schooling, where the likelihood of training increases with the level of educational attainment. Moreover, these statistics suggest that job-training is not a substitute for formal schooling but rather a complement. Both of these results replicate findings among men. Second, the data show that job-training -- at least the longest event -- is not received upon school completion but several years later, by women that for the most part have had interruptions in their labor market participation. Third, "academes", the prototype of the proprietary institution, are the most frequent source of institutional job-training for women in Peru. This implies that the programs they offer are the main source of job skills outside the formal education system for Peruvian females. Fourth, there appears to be a significant relationship between job-training and the labor force participation of women. Finally, the amount of training received by trainees from all sources (measured in hours) indicates that the job-skills obtained could be expected to be a significant addition to a woman's human capital endowments.

IV. SELECTION INTO TRAINING

This section explores the factors that determine the probability that women will receive training, with particular emphasis on the relationship between training and educational attainment. The choice of job-training depends on a comparison of the costs with the present value of expected future earnings associated with each alternative. In this section a logit function was estimated for training participation. Separate models by training

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[13] In the case of women, rather than construct the usual proxy for potential experience, this variable was used for work experience. The variable adds up the years of work reported in all jobs described in the PLSS. That is, it includes the weeks, months or years of tenure for up to five jobs per woman.

provider were then estimated to examine whether the effect of schooling on the probability of training is the same across providers.

The set of explanatory variables used in the model includes formal schooling indicators, labor market experience and migration prior to the training event, and several proxies for family background. In order to capture shifts in the probability of training associated with different levels of schooling, formal education is measured by five dummy variables indicating the last level of schooling completed (see definitions in Table A-1). Also included is a dummy variable for schooling diplomas (see definition in Table A-1) with the expectation of finding a lower likelihood of choosing training among those who already have a certificate. Additionally, as proxies for the quality of the schooling received, two dummy variables were included: public school attendance and the existence of a meals program in the last primary school attended. Previous research (Ashenfelter 1978, Ashenfelter and Card 1985) indicates that participation in training programs depends strongly on labor market performance in the period before the training event. Individuals whose earnings have fallen and/or were abnormally low before training, or women who were trying to reenter the labor market (Boothby 1986), are more likely to enroll in these programs. Unfortunately, past earnings were not reported in the PLSS. Nevertheless, by assuming no breaks in schooling, some retrospective information on reported job experience and migration at the time of the training choice was constructed. The date of the longest training event was known for those who attended a course. Therefore, to find out what their schooling, and migration experience at the time of the decision was straightforward for this subsample. This information was not available for the non-participant group; since it was not known when they decided not to train, a time of the choice has to be imputed. In these cases, the approach used by Jimenez and Kugler (1987) in Colombia was used. That is, it is assumed that the date of the decision not to train was when trained women of the same age received the longest course. The procedure is as follows. First, the trained women by current age cohort were used to estimate the mean age at which each age cohort received training. Second, each of the age-specific means was used to impute the age at which the non-trained decided not to train.

In this paper, migration is measured as a dummy variable with the value of 1 if the individual had moved from the place of birth at the time of training. Women's labor market experience is measured by two variables which rely on the past job experience reported in the PLSS. The first is a dummy variable indicating whether the individual reported any work experience prior to the training event. The second is the number of years of reported job experience prior to this event. These proxies are expected to capture a woman's labor market experience at the time. Family background is captured by a dummy variable for father's school attendance and by a dummy for non-city place of birth (see Table A-1). These variables may reflect the socioeconomic and cultural environment which influence an individual's preference for training. Table 3 displays the results of the job-training participation model. The Table also shows estimated marginal effects of the independent variables on the probability of receiving training, evaluated at the mean probability in th e sample [14/].

Table 3 shows that the likelihood of receiving training is positively related to the level of education attained. A comparison of these results with those of males reveals strong similarities. In general, estimates for both males and females indicate that the higher the school attainment, the higher the likelihood of receiving job-training. For the average woman in the sample, those who have completed secondary and some post-secondary school, have the highest probability of participation in job-training courses. Against what could be expected from the screening

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[14/] Note that the coefficients in the logit model do not measure the effect of the explanatory variables on the choice probability directly. That is:

$$\ln(P_1/P_o) = Z\gamma_1 + v_1$$

The marginal effect of the Z variable on the probability of training is given by:

$$P_1\gamma_1 (1 - P_1)$$

Table 3
All Women: Selection into Training

Independent variables	Logit coeff.	Marginal effect a/
Constant	-6.082* [0.42]	-1.217*
Age at the time of training (years)	0.275* [0.02]	0.055*
Age at the time of training squared	-0.0049* [0.0004]	-0.0009*
Some second. schooling (6-9 years) b/	0.601* [0.14]	0.120*
Second. school completed (10 years)	1.663* [0.12]	0.332*
Some post-secondary schooling (11-13 years)	1.707* [0.17]	0.341*
Post-sec. schooling (14+ years)	1.178* [0.19]	0.235*
School diploma	-0.038 [0.15]	-0.007
Last school attended was public	0.129 [0.10]	0.025
Received free meals last primary school	0.036 [0.08]	0.007
Father attended school	0.387* [0.17]	0.077*
Born in countryside, village or town	-0.171* [0.10]	-0.034*
Migrant at time of training	0.068 [0.09]	0.013
Resident in Lima	0.590* [0.08]	0.118*

Table 3 (cont.)

Independent variables	Logit coeff.	Marginal effect a/
Reported job experience (years) at training	-0.0161 [0.012]	-0.003
Had any job experience at time of training	0.278* [0.12]	0.055*
-2 log likelihood	1,874.6	
v^2	766.6	
No. observations	3,826	

Note: a/ Evaluated at the mean probability in the sample.
b/ Excluded category is primary schooling.

* Statistically significant at the 10 percent level or better. Standard errors in parentheses.

hypothesis, lack of a school certificate was not found to be a relevant stimulus to participate in job-training. As in the case of men, these findings support the hypothesis that job-training is a complement to formal education, rather than a substitute. One interpretation of these results is that they merely reflect the excess demand for higher education found in Peru since the late 1960s. Alternatively, it could be argued that these findings reflect a gap between the skills obtained in secondary school and the skills females require in the labor market. This latter interpretation is supported by the specific skills sought by women and the delay of training after leaving school (see Table 2).

With regard to labor market experience, Table 3 shows that women who had some work experience are more likely to enroll in training courses. However, unlike the case of men, where years of work experience increased the probability of receiving training, it was found that additional years of job

experience do not increase the probability of training among women. These results suggest that women may need training in order to find employment, whereas men need job-training in order to be promoted within a job.

Even though the training decision is made around age twenty, there appears a significant impact of father's school attendance on women's training participation, possibly indicating that parents with schooling are likely to have passed on to their daughters preferences for schooling and training. In addition, it is found that women born in rural settings have a lower likelihood of participation in job-training programs. Finally, Table 3 shows that living in metropolitan Lima increases the probability of receiving job-training compared to other urban areas. Note that among men similar access to job-training programs was found in Lima and the other urban areas. Unless the jobs which require training -- especially clerical jobs -- are more concentrated in Lima, these results seem to indicate that women's job-training opportunities are unequally distributed between the capital city and the remaining urban areas.

In order to examine the relationship between formal schooling and job-training by type of training institution, the participation model was applied to the choice of a specific type of provider: job-based programs (JBP), post-secondary training institutes (PST), and academes (ACT). Table 4 summarizes the estimated marginal effects of different levels of school attainment on such probabilities, evaluated at the mean probability of the sample.

Table 4

Women: Effect of Educational Attainment on the Probability of Training by Type of Institution

Educational attainment	Job based (JBP)	Post-secondary training (PST)	Academes (ACT)
Some secondary a/ (6-9 years)	0.173* (3.41)	0.246 (1.65)	0.116* (2.93)
Secondary complete (10 years)	0.385* (8.79)	0.502* (4.08)	0.325* (9.25)
Some post-secondary (11-13 years)	0.374* (6.70)	0.655* (4.97)	0.270* (5.91)
Post-secondary complete (14+ years)	0.625* (5.44)	0.629* (4.81)	0.192* (4.19)

Notes: a/ Excluded category is primary schooling.
* Statistically significant at the 5 percent level or better.
t-values in parentheses.

The figures displayed in Table 4 indicate that the detected complementarily between schooling and training is valid for all sources of training, even though the only program with a high-school entry requirement is PST. The probabilities of receiving occupation-based and post-secondary training are highest for women with 11 or more years of schooling. With regard to academes, secondary school graduates exhibit the highest probability of receiving job-training there. As in the case of men, these results suggest that women with limited schooling also face limited opportunities for job-training.

Summarizing the findings of this section, it may be concluded first, that women's participation in occupational training is largely determined by educational attainment, where secondary schooling is usually the lowest entry level into training courses. Second, there may exist regional disparities regarding job-training opportunities for women. Third, investments in

training are a choice made by women with little job experience, attempting to improve their prospects for entering the labor market.

V. THE EMPLOYMENT AND EARNINGS EFFECTS OF TRAINING

The objective of this section is to estimate the employment and earnings effects of job-training. First, estimates of the employment effects of training are presented. Second, an estimate is made of the impact of job-training on the wage rates of women in the private wage and nonwage sectors of employment.

The Employment Effects of Training

The effect of training on women's employment will be measured with a multinomial logit model. This model examines women's probabilities of employment in the wage private, public, and self-employed sectors, relative to not working or being an unpaid worker [15]; and the effect of training on such probabilities. The effect of the training variable was expected to be positively related to a woman's decision to work. Because of the type of skills women acquire in training programs (typically clerical skills), training was expected to have the largest impact on the probabilities of employment in the wage (public and private) sector.

A woman will work if offered a wage higher than her asking (reservation) wage. A woman's offered wage depends for the most part on personal characteristics such as her age, formal schooling, job-experience, and training. A woman's asking wage depends on different factors for married and single women. Even though the majority of Peruvian single women live in a family with other income earners, it is reasonable to expect that a single woman's asking wage will largely depend on personal characteristics. A married woman's asking wage depends on the balance between the need of her

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[15] This means that the choice equation was normalized with respect to the alternative of not working or performing unpaid work.

family for additional income, and the cost to her family of obtaining additional income. When a wife enters the labor market, the household must compensate for the loss of her work at home. The cost of which depends on the number and ages of her children, and the composition of the household. In this study household composition variables are included as proxies of these costs (see definitions in Table A-1). The need for additional income, plus the factors that determine how much a woman needs to work in order to earn a given amount of income, appear to increase as her husband's income decreases, as non-labor income of the family decreases, and as the living standards aspirations of the family increase. This study included age, schooling, and annual income of the husband, annual non labor income and remittances received by the family.

Table 5 shows the results of the multinomial logit estimation of the sector of employment model.

Table 5
Women: Choice of Sector of Employment
(multinomial logit coefficients) a/

Independent variables	Sector of Employment		
	Wage Private	Wage Public	NonWage
Constant	-6.675*	-12.341*	-6.750*
	(11.78)	(12.68)	(14.67)
Some secondary (6-9 years)	-0.034	1.070*	-0.416*
	(0.18)	(2.92)	(3.00)
Secondary complete (10 years)	0.375*	1.832*	-0.603*
	(2.22)	(5.62)	(4.36)
Some post-second. (11-13 years)	0.379*	2.186*	-0.517*
	(1.69)	(5.77)	(2.26)
Post-sec. complete (14+ years)	0.411	2.760*	-0.748*
	(1.61)	(7.19)	(2.72)
Diploma	0.378*	0.785*	-0.136
	(1.88)	(3.54)	(0.58)
Training	0.852*	0.884*	0.671*
	(7.43)	(5.62)	(5.91)
Annual remittances to household	-0.00002	-0.00003*	-0.00001
	(0.21)	(1.76)	(1.01)

Table 5 (cont.)

Independent variables	Sector of Employment		
	Wage Private	Wage Public	NonWage
Annual non-labor household income	-0.00006 (0.97)	-0.00002* (2.19)	-0.00001* (1.87)
Age	0.320* (9.31)	0.483* (8.56)	0.346* (12.74)
Age squared	-0.0041* (9.31)	-0.0058* (8.56)	-0.0038* (12.74)
Number of household members			
# 0-4 years old	-0.099 (1.44)	0.093 (0.99)	0.169* (3.19)
# 5-11 years old	-0.031 (0.62)	0.011 (0.16)	0.046 (1.13)
# 12-19 years old	0.030 (0.68)	0.187* (3.20)	0.040 (1.11)
# females 20-50 years old	0.017 (0.32)	-0.118 (1.40)	-0.186* (3.35)
# males 20-50 years old	-0.103* (1.72)	-0.205* (2.20)	-0.143* (2.62)
# 50 years old and over	-0.066 (0.99)	-0.011 (0.12)	-0.274* (4.16)
Spouse's age	-0.030* (5.13)	-0.026* (3.26)	-0.007* (2.47)
Spouse's years of schooling	0.056* (2.66)	0.088* (3.28)	0.014 (0.98)
Spouse's annual compensation	-0.00002* (3.45)	-0.00003* (4.60)	-0.00001* (4.34)
Residence in Lima	0.532* (4.80)	0.297* (1.92)	-0.235* (2.55)
Log Likelihood	3,504.2		
χ^2	1,637.6		
No. observations	543	266	898

Notes: * Statistically significant at the 10 percent level or better.
a/ Marginal effects not shown.

Table 5 shows that the effect of job-training on the choice of employment is positive and significant. That is, job-training increases women's probabilities of employment in the wage (public and private) and nowage sectors. To be able to compare the relative strength of the training effect on the choice of alternative sectors, an estimate was made of the marginal effect of training from the logit coefficients.[16/] It was calculated that job-training increases by 10 percent a woman's likelihood of wage employment in the private sector, by 2 percent her likelihood of employment in the public sector, and by 5 percent her probability of entering nonwage employment, everything else held constant. These estimates indicate that job-training has the largest impact on the choice of wage employment in the private sector. The training coefficient contains both supply and demand factors. On the demand side, women may take training courses in order to seek employment in the private sector. On the supply side, attendance to training programs may be seen by private sector employers as desirable in the selection process of job applicants.

The coefficients of the formal schooling variables indicate that a woman is more likely to enter public sector employment than the average woman in the sample if she has more education and a degree, and to enter private sector wage employment if she has a school diploma. The more education a woman has, the less likely she is to enter the nonwage sector. A comparison of the marginal effects of schooling on the probability of employment in the different sectors indicates that school attainment does screen more educated women into the public sector.

Most of the proxies for the costs to the household of a woman working show the expected behavior. With regard to household composition, the

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16/ Here, the marginal effect of any exogenous variable has been evaluated at the mean predicted probability of the sample. In the case of sector 1 for instance:

$$\partial P_1/\partial S = P_1/ \left(b_1 - \sum_{i=0}^{3} P_i\, b_i\right)$$

Table shows that the number of children in the family is not as strong a constraint for labor force participation as is the need for additional income. As the number of females between 20 and 50 years old in the household increases, the likelihood of nonwage employment decreases, possibly reflecting that the presence of other potential income earners reduces the need for the woman studied to go to work. Consistently, and for the same reasons, a woman's likelihood of employment decreases as the number of males between 20 and 50 years old in her household increases. Additionally, the presence of elders (50 years old and over) lowers women's probabilities of employment in the nonwage sector. The coefficients on the proxies of the family need for additional income show the expected negative effects on women's probabilities of employment across sectors. Thus, women's probabilities of employment in general decrease as husband's experience and income increase, and as remittances and non-labor income increase. In general, a woman's probability of wage employment (private and public) increases as the husband's schooling increases. Given that more educated spouses have higher permanent income, the positive impact of husbands' education on wives labor force participation does not reflect the need for income in the family, but aspirations for a higher standard of living. Finally, the negative effect of residence in Lima for employment in the nonwage sector indicates, after controlling for all the other exogenous variables, that non-Lima women are more likely to choose nonwage over wage employment.

In summary, the results of this study are largely consistent with prior research in developed countries showing that job-training significantly affects the employment status of urban women. These findings suggest that job-training has an effect of women's income through a so-called "allocative" effect (Welch 1970) which relates to individuals' capacity to evaluate and make advantageous choices. Job-training may have a non-cognitive effect on Peruvian women which can make them more receptive and self-confident, and consequently more willing to engage in economic opportunities.

The Earnings Effect of Training

The objective of this Section is to test the hypothesis that job-training increases women's productivity measured by an actual increase in earnings. In this analysis separate estimates were made of the effect of job-training on the wages of women in private sector wage employment, and on the wages of women in self-employment. Section II described the application of Trost and Lee's procedure accounting for the selection of sector of employment to produce unbiased estimates of the wage equations. Section II also discussed the use of instrumental variables to account for the selection of women in training courses.

As a first step, the multinomial logit model of choice of sector of employment presented in the previous section (see Table 6) was used to compute the selectivity factor λ. Then, as the second step, the estimated selectivity factor λ was introduced as regressor in each sector's wage function to correct the estimates for individual differences in the probability of working in the sector. The less likely it is that a particular woman will work in a sector, the larger the value of λ for this woman in the specific sector's wage function. If women with below average offered wages have above average asking (reservation) wages, ceteris paribus, one may expect λ to have a negative sign in the offered wage functions. If the opposite relationship holds, one may expect λ to have a positive sign in the wage functions.

The wage equation estimated here follows the human capital literature where schooling, job-training and work experience are all expected to have a positive impact on earnings because they provide women with additional knowledge, information and skills that enhance their productivity. The empirical specification of the wage function includes three splines for years of schooling at primary, secondary and post-secondary levels, and public school attendance as proxies for formal education (see definitions in Table A-1). Work experience is captured by tenure in the current job and by actual age instead of the usual potential work experience proxy, because of the

measurement problems mentioned earlier [17]. The standard model is extended to include a set of personal background characteristics and place of residence. In the analysis of wages in the private sector two characteristics of work environment were included which are likely to affect women's wages: the presence of a union in the firm, and access to social security. In the analysis of wages in the self-employed sector several proxies characterizing the business were included: value of capital and assets, and the numbers of hired and family workers.

The analysis of the effects of job-training on the wages of self-employed women presents difficulties in obtaining a reliable measure of earnings, as well as problems with the application of wage functions to the self-employed in household businesses. Self-reported earnings from the business may be inaccurately measured for several reasons. First, it is not certain whether it reflects income earned by the individual woman or by all the individuals working in the enterprise. Second, this measure of income is likely to be biased because most family businesses do not keep detailed records of expenditures and revenues, because they carry out frequent non-monetary transactions with customers and suppliers, and because there is frequent consumption by the household of enterprise goods and services. In addition to the problems of measurement of business income, the specification of the wage equation for the self-employed differs from that of wage workers at least for two reasons. First, the wage equation for the self-employed should separate the returns to physical capital, and separate other labor inputs (mostly family labor) from the returns to the human capital of the self-employed woman. Second, the self-employed wage equation should account for managerial ability and risk taking.

With regard to the effect of job-training on wage rates, an instrument for the training variable was constructed using the estimates of the training participation equation given by Table 3. The results of the test

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[17] Although age does not reflect accurately work experience because of women's interruptions in labor force participation, positive correlation was assumed.

for the endogeneity of the training variables described in Section II (see footnote 4) did not reject the hypothesis of zero correlation between the predicted probability of entering training and the error term of the wage equations. Therefore, the results presented in Table 7 were estimated using the observed value of the training variable.

For comparative purposes OLS estimates are also shown in Table 6. Columns 1 and 2 report the estimates of the wage equation for the sample of female wage workers in the private sector. Columns 3 and 4 report the estimates for the sample of self-employed women.

To the extent that the labor force participation pattern of women leads them to invest less in human capital than men, and to the extent that women choose occupations with fewer human capital requirements than men, then one may expect lower returns to human capital among women relative to men.

A comparison of the selectivity adjusted and OLS estimates shows that most coefficients do not change after accounting for the choice of sector of employment. Table 6 suggests the scope of the differences in the structure of earnings and the process of earnings determination between the wage and nonwage sectors. As expected, the approach used here does not perform well in explaining earnings variations among women in the nonwage sector. With regard to the returns to education different patterns are found in both sectors of employment. In the wage sector, the largest returns to schooling are at secondary level. In the nonwage sector, the largest returns are at primary level, which is not surprising since literacy and numeracy are presumably obtained at this level.

Table 6
Wage Functions Women in Private Wage and in Nonwage Employment

Independent variables	Wage Workers		Nonwage Workers	
	OLS (1)	Sel.Adj. (2)	OLS (3)	Sel.Adj. (4)
Constant	-0.247	-0.260	-1.109*	-1.095*
	(0.67)	(0.70)	(2.78)	(2.74)
Age	0.022	0.023	0.064*	0.064*
	(1.19)	(1.14)	(3.21)	(3.18)
Age squared	-0.0001	-0.0001	-0.0007*	-0.0008*
	(0.54)	(0.56)	(3.06)	(3.03)
Tenure in current job	0.053*	0.054*	0.022*	0.022*
	(3.41)	(3.38)	(1.77)	(1.88)
Tenure in current job squared	-0.001*	-0.001*	-0.0004	-0.0004
	(2.59)	(2.56)	(1.20)	(1.24)
Spline primary education	0.046	0.045	0.099*	0.098*
	(1.05)	(1.06)	(3.15)	(3.14)
Spline secondary education	0.056*	0.056*	0.032	0.034
	(2.63)	(2.64)	(1.34)	(1.40)
Spline higher education	0.014	0.017	0.021	0.017
	(0.69)	(0.74)	(0.56)	(0.44)
School diploma	-0.015	0.025	a/	a/
	(0.23)	(0.26)		
Last school attended was public	-0.230*	-0.229*	-0.038	-0.032
	(2.97)	(2.94)	(0.35)	(0.29)
Job-training	-0.004	-0.006	0.099	0.096
	(0.06)	(0.09)	(1.05)	(1.10)
Father's years of schooling	0.006	0.006	0.027*	0.027*
	(0.67)	(0.65)	(1.97)	(1.88)
Mother's years of schooling	0.020*	0.020*	0.014	0.013
	(1.69)	(1.68)	(0.84)	(0.75)
Married or living together	0.175*	0.171*	0.006	0.005
	(2.43)	(2.41)	(0.08)	(0.006)
Residence in Lima	0.150*	0.147*	0.002	0.013
	(2.21)	(2.17)	(0.03)	(0.01)

Table 6 (cont.)

Independent variables	Wage Workers OLS (1)	Wage Workers Sel.Adj. (2)	Nonwage Workers OLS (3)	Nonwage Workers Sel.Adj. (4)
Union in the firm	0.237* (2.79)	0.233* (2.74)		
Social Security participation	0.330* (4.43)	0.340* (4.42)		
Total capital of enterprise			0.003 (0.23)	0.004 (0.21)
Number of hired workers in enterprise			0.093* (2.30)	0.090* (2.28)
Number of family workers in enterprise			0.011 (0.34)	0.011 (0.28)
λ		0.009 (0.43)		0.025 (0.35)
R^2 adjusted	0.339	0.339	0.085	0.085
Mean dependent variable	1.141	1.141	0.898	0.898
No. observations	543	543	898	898

Notes: * Statistically significant at the 10 percent level or better. t-values in parentheses.
a/ Omitted because of small number of cases.

A comparison of the figures for wage workers in Table 6 with prior results for males [18/] shows that male and female salaried workers in the private sector have similar returns to secondary schooling. However, salaried women have lower returns to an additional year of schooling at primary and higher education levels than their male counterparts, possibly because women are concentrated in few occupations and industries. A comparison of self-

[18/] See, Arriagada, AM., op. cit., Table 7.

employed women with self-employed men [19] indicates another pattern in the nonwage sector. Self-employed females have higher returns to primary education, and lower returns to secondary and post-secondary education than the males in the sector. Consistent with the findings for men, there is a strong negative impact of public school attendance on the wage outcomes of women in private sector wage employment.

A comparison of the returns to experience between women in wage work and self-employment again shows sectoral differences. Column 1 in Table 6 shows a large effect of experience in the current job on the wage rates of women in private sector employment. This rapid wage rate growth could be reflecting the fast initial rise in earnings characteristic of early labor market experience, where women perform entry-level jobs whose main function is to provide training in labor market discipline (Thurow 1980). To the extent that women choose occupations where their human capital depreciates the least, so that interruptions are less costly, and that they spend less time in the labor force when they are in these occupations, one would expect that age as a proxy of potential work experience would have a positive effect on wages. In fact, it has been found that the use of age tends to overstate the difference in the value of experience for women (Sandell and Shapiro, 1978). However, in this data set, women's potential work experience as proxies by age has no significant effect on the wage rates of those in private sector employment. As was the case for men between wage and nonwage employment, self-employed women show lower returns to an additional year in the current job than women in wage employment, but higher returns to general experience (as proxies by age). This result is not surprising since there is no one to promote or reward seniority in the nonwage sector, and that since many of the self-employed jobs require low skill levels (for example, street vendors).

Contrary to expectations, the results of Table 6 show that job-training has no significant effect on the hourly wage rates of women in salaried employment. This finding differs greatly from comparable estimates

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[19] Ibid., Table 9.

for salaried men, where job-training showed a positive effect on wages of over 10 percent. In addition, these results show no significant effect of job-training on the hourly wages of women in the nonwage sector. This finding replicates prior results for self-employed men. Other specifications were estimated with different proxies for job-training such as hours of training, long period-training versus short-period-training, training with diploma and training without diploma, but these additional estimates did not alter the results presented in Table 6. In order to investigate whether job-training indirectly affects wages through other forms of human capital, training (in general and by provider) was interacted with the experience and schooling variables. Again, the results of this exercise did not modify the original finding: Post-school-training does not have a positive effect on the wages of women working in the private sector or in the nonwage sector.

A possible interpretation of these findings is that men and women train for the most part for different occupations and in different institutions. Most evaluations on institutional training programs show the greatest earnings gains for in-service industrial training in blue collar and supervisory level jobs (EIC 1982, Jimenez and Kugler 1987). Most women train for typically female occupations (services and clerical jobs) in proprietary institutions (academes). Most men attend occupation-based programs and technical institutes rather than "academes" [20/]. The training received by men is largely part of the official schemes operated by the most important sectors of economic activity (such as manufacturing and construction). Differences in the quality of the job-training received were not measured by our survey, and that may partially explain the lack of impact of training on women's wage rates. If the quality of the instruction provided in these "academes" is such that no real learning takes place, there are no grounds to expect an enhancement in productivity, and therefore, in earnings. Further, and related to this argument, there may be institutional factors which prevent women from entering the most successful training programs.

[20/] Ibid.

In addition to the quality of training issue, men and women in both sectors of employment have radically different occupational distributions. In the wage sector, predominantly male occupations tend to be better paid, and have more opportunities for career advancement than predominantly female occupations. In fact, predominantly female occupations tend to be low-paid jobs with flat wage profiles, such as those of clerical occupations (Streecker-Seeborg, et. al., 1984, Boothby 1986). As mentioned earlier, a comparison of hourly wages between the samples of males and females in the private and the nonwage sectors shows that women's wage rates are, on average, 20 percent lower than those of their male counterparts, and that having received training does not seem to lower the gap. A reason for job-training not being effective at reducing male-female wage differentials could be that with rising female labor force participation, the proportion of women in entry level jobs increases. Furthermore, research has shown that women who train for non-female occupations do not earn more in those non-female jobs, than those women who train for typically female occupations actually working in female jobs (Streecker-Seeborg, et. al., 1984). This suggests that there exists discrimination in the labor market that negatively affects the occupational attainment of women [21/].

Regarding the selectivity factor (λ), the estimated coefficients are not significant in either sector, indicating no "unobserved" self-selection in the determination of the observed average wage rates in the wage and nonwage sectors of employment.

Contrary to expectations, no sex-specific parental schooling effect was found. Although mother's years of schooling has a strong effect on the wage rates of salaried women in the private sector, while father's years of schooling has a strong effect on the wages of self-employed women, this may reveal primarily cultural differences.

21/ Bergmann and Adelman (1973) argue that the fact that women do not train or apply for male jobs is largely due to women's realism about the potential payoff of such training or job.

The results for the enterprise variables confirm the expected relevance of "hired labor" for the earnings of self-employed women. As a proxy for the success of the business, this variable may be capturing the effects of unobservable managerial ability and personal drive. Nevertheless, the capital and assets of the business managed by a female do not appear to have the expected positive impact on earnings found among the male self-employed [22/]. This result may be due to the low amounts of capital and assets in female-managed businesses. Self-employed women have, on average, about a fourth of the capital and assets found in male-managed enterprises.

Finally, and again unlike the case of men in private sector wage employment, the presence of union in the firm and access to social security did have a positive and significant effect on women's wage rates.

VI. CONCLUSION

This study examined the patterns and determinants of Peruvian women's participation in post-school job-training programs, and the labor market outcomes of that training. In Peru, urban males and females receive post-school training from different institutions. While the majority of males attend job-based training programs sponsored by the government, most women receive classroom training in "proprietary training institutions". For the most part these institutions offer courses in clerical occupations, preparing them to enter predominantly female occupations.

With regard to selection in training courses, the results of this study replicate findings for Peruvian men. A woman's probability of receiving job-training increases with her school attainment, revealing a strong complementarily between schooling and post-school training. This implies that women with limited schooling have also limited training opportunities. The results indicate that the typical trainee has completed secondary school, is

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[22/] Arriagada, AM., op. cit.

in her early twenties, and has already had interruptions in her participation in the labor market since leaving school. On average, she has over one year of work experience at the time she receives training.

Section V examined the employment and earnings effects of training. Overall, and consistent with prior research, it was found that job-training significantly increases the employment probability of women. Job-training increases by 10 percent the likelihood that the average woman in the sample will obtain wage employment in the private sector, by 2 percent her probability of entering public sector employment, and by 5 percent her probability of entering nonwage employment.

The study does not find the expected positive and significant impact of job-training in the hourly wage rates of the women in the wage (private) and nonwage sectors of employment. There are several possible explanations for this finding. First, since women, on average, expect to participate in the labor market for less years than men, they have an incentive to choose training for occupations which require lower investments in human capital than those chosen by men. Typically these occupations are characterized by flat participation-wage profiles. Second, there are no standards to assess the "quality" of the training provided by the proprietary institutes where most women receive training. Finally, discrimination against women in the labor market may prevent them not only from entering the most successful training programs, but the jobs with better opportunities for wage and career advancement as well.

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ANNEX 1

Table A-1
Definition of the Variables used in the Analysis

Variable	Definition	Equation TR	LF	W
Dependent variables				
TRAIN1	= 1 if took job-training course between 1975 and the PLSS, 0 otherwise	X		
STATUS	= 0 if not in the labor force, unemployed or unpaid, 1 if private wage, 2 if public wage, 3 if nonwage		X	
WPRIVATE	= 1 if private wage employment, 0 otherwise		X	
NONWAGE	= 1 if nonwage employment, 0 otherwise		X	
LNWAGE	= natural log of the real hourly wage rate in main occupation (intis at June 1986 prices)			X
Experience				
AGEYRNEW	= age in years		X	X
AGEYSQ	= age squared		X	X
AGETRAIN	= age in years when trained	X		
AGETRSQ	= age when trained squared	X		
TJOBX	= years of self-reported work experience in all jobs recorded in the PLSS			X
TRJOBX a/	= years of self-reported work experience when trained	X		
TRJEXP	= 1 if reported any work experience when trained, 0 otherwise	X		
XOCM7	= years of job specific experience in main occupation			X
XOCSQM7	= years of job specific experience squared			X
Education and Training				
LTSECOND	= 1 if 5 - 9 years of schooling, 0 otherwise	X	X	
SECONDRY	= 1 if 10 years of schooling, 0 otherwise	X	X	
LTHIGHER	= 1 if 11-13 years of schooling, 0 otherwise	X	X	
HIGHER	= 1 if 14+ years of schooling, 0 otherwise	X	X	
SPLYRSC1	= years of primary schooling			X
SPLYRSC2	= years of secondary schooling			X
SPLYRSC3	= years of post-secondary schooling			X
DIPLOMA	= 1 if has secondary-technical, post-secondary non-university, or university degree, 0 otherwise		X	X
PTRAIN1	= predicted probability of training course		X	X
School Characteristics				
PUBSCHL	= 1 if last school attended was public, 0 otherwise	X		X

Table A-1 (cont.)

Variable	Definition	Equation TR	LF	W
FOODSCHL	= 1 if last primary school attended provided free meals	X		
Background Information				
FTHEND	= 1 if father ever attended school, 0 otherwise	X		
FYR_SCHL	= Father's years of schooling			X
MYR_SCHL	= Mother's years of schooling			X
FAGRIC	= 1 if father was a farmer most of his life			X
MIGRTR	= 1 if had migrated when trained, 0 otherwise	X		
BORNTWN	= 1 if was not born in a city, 0 otherwise	X		
Marital Information				
MARITAL0	= 1 if married or living together, 0 otherwise			X
SP_AGE	= spouse's age in years		X	
SP_YRSCH	= spouse's years of schooling		X	
SP_ACOMP b/	= spouse's annual compensation (intis June 1986)		X	
Household Information				
T0TO4	= number of 0 to 4 years old in the household		X	
T5TO11	= number of 5 to 11 years old in the household		X	
T12TO19	= number of 12 to 19 years old in the household		X	
TF20TO50	= number of females 20 to 50 years old in the household		X	
TM20TO50	= number of males 20 to 50 years old in the household		X	
TOVER50	= number of people over 50 years old in the household		X	
REMITYR	= remittances received by the household during the last 12 months (intis of June 1986)		X	
UNEARNY c/	= total non labor income received by the household during the last 12 months (intis June 1986)		X	
Region				
LIMA	= 1 if lives in metropolitan Lima, 0 if lives in other urban areas (OUAs)	X	X	X
Enterprise information				
TOTCAP	= enterprise total capital and assets (intis June 1986)			X
FAMLAB	= number of family members working in the enterprise with or without pay			X
HIRWRKRS	= number of hired workers working in the enterprise			X

Table A-1 (cont.)

a/ The survey gathered information on the years of tenure in the main and secondary jobs performed by each individual during the last 12 months (up to 4 different jobs per person). It also gathered information on the years of tenure in the job performed before the main job held during the last 12 months. TJOBX is the sum of the years of tenure in that prior job, plus the years of tenure in the current job in which the individual has worked the longest time.

b/ Defined as husband's real monthly earnings x months worked during the last 12 months in his main job.

c/ Includes the real annual income a household received from the following sources: charity, alimony, pension, interest, rental, dividends.

WOMEN IN THE LABOR FORCE: MAIN OCCUPATION AND INDUSTRY OF EMPLOYMENT DURING THE LAST 12 MONTHS
(NO TRAINING)

\INDUS OCC \ TRY UPATION\	NOT CLASS- IFIED	AGRICUL TURE FISHING	MINING	MANUFAC TURE	ELECTRIC GAS WATER	CONSTRUC TION	COMMERCE	TRANS PORT	FINANCE	OTHER SERVICES 9	TOTAL
PROFESS IONAL	1/ 0.00 2/ 0.00	0 00 0.00	1.79 50.00	5.36 1.57	1.79 33.33	0.00 0.00	14.29 1.43	0.00 0.00	12.50 25.00	64.29 26.87	56 5.92
GOVERNM/ ADMIN	0.00 0.00	0.00 0.00	0.00 0.00	100.00 0.52	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1 0.11
CLERICAL	0.00 0.00	0.00 0.00	0.00 0.00	12.50 4.19	3.13 66.67	4.69 100.00	26.56 3.04	9.38 60.00	29.69 67.86	14.06 6.72	64 6.77
SALES VENDOR	0.20 100.00	0.20 7.14	0.20 50.00	3.39 8.90	0.00 0.00	0.00 0.00	95.22 85.36	0.20 10.00	0.40 7.14	0.20 0.75	502 53.07
SERVICE WORKERS	0.00 0.00	0.68 7.14	0.00 0.00	4.05 3.14	0.00 0.00	0.00 0.00	36.49 9.64	0.68 10.00	0.00 0.00	58.11 64.18	148 15.64
AGRICULT WORKERS	0.00 0.00	100.00 85.71	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	12 1.27
PRODUCTI WORKERS	0.00 0.00	0.00 0.00	0.00 0.00	95.71 81.68	0.00 0.00	0.00 0.00	1.84 0.54	1.23 20.00	0.00 0.00	1.23 1.49	163 17.23
TOTAL	1 0.11	14 1.48	2 0.21	191 20.19	3 0.32	3 0.32	560 59.20	10 1.06	28 2.96	134 14.16	946 100.00

WOMEN IN THE LABOR FORCE: MAIN OCCUPATION AND INDUSTRY OF EMPLOYMENT DURING THE LAST 12 MONTHS
(WITH TRAINING)

\INDUS OCC \TRY UPATION\	AGRICUL TURE FISHING	MANUFAC TURE	ELECTRIC GAS WATER	CONSTRUC TION	COMMERCE	TRANS PORT	FINANCE	OTHER SERVICES	TOTAL
PROFESS IONAL	1/ 0.00 2/ 0.00	0.00 0.00	0.00 0.00	2.00 33.33	8.00 2.00	2.00 7.14	8.00 12.12	80.00 35.09	50 10.10
GOVERNM/ ADMIN	0.00 0.00	100.00 0.79	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1 0.20
CLERICAL	1.53 50.00	21.37 22.22	0.76 100.00	0.76 33.33	25.95 17.00	8.40 78.57	19.85 78.79	21.37 24.56	131 26.46
SALES VENDOR	0.00 0.00	3.23 3.97	0.00 0.00	0.65 33.33	94.19 73.00	0.00 0.00	1.29 6.06	0.65 0.88	155 31.31
SERVICE WORKERS	0.00 0.00	1.82 0.79	0.00 0.00	0.00 0.00	23.64 6.50	1.82 7.14	0.00 0.00	72.73 35.09	55 11.11
AGRICULT WORKERS	100.00 50.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	2 0.40
PRODUCTI WORKERS	0.00 0.00	90.10 72.22	0.00 0.00	0.00 0.00	2.97 1.50	0.99 7.14	0.99 3.03	4.95 4.39	101 20.40
TOTAL	4 0.81	126 25.45	1 0.20	3 0.61	200 40.40	14 2.83	33 6.67	114 23.03	495 100.00

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